Listing of Claims

1. (Currently amended) A method for simultaneous editing of at least a portion of a printed circuit board (PCB) design by multiple users, comprising:

transmitting the PCB design portion to first and second clients for graphical display at each of the clients, wherein the graphical displays at each of the first and second clients permit users at said clients to simultaneously view a representation of common PCB artwork corresponding to a common region of the PCB design;

transmitting, for display at each of the clients as a graphically-depicted subregion of the common region, a protection boundary associated with a PCB design object being edited at the first client; and

rejecting a request from the second client to edit ~~an~~ a PCB design object within ~~a~~the graphically-depicted subregion, ~~bounded by the protection boundary.~~

2. (Currently amended) The method of claim 1, wherein the protection boundary comprises the PCB design object being edited at the first client.

3. (Currently amended) A method for editing a printed circuit board (PCB) master design during an editing session throughout which each of first and second users may edit a PCB master design ~~portion~~ and view edits made to the same PCB master design ~~portion~~ by the other of the first and second users during the editing session, comprising:

transmitting at least a portion of the PCB master design ~~portion~~ to the first and second users at respective first and second clients for simultaneous graphical display on each of said clients, wherein

each of the graphical displays on the first and second clients ~~including~~ includes a ~~representations~~ representation of common PCB artwork corresponding to a region of the PCB master design, the displayed common PCB artwork ~~master design portion~~including a plurality of associated PCB design objects, and

each of the first and second clients can simultaneously view the common PCB artwork and edit the associated PCB design objects;

receiving, during the editing session, a first edit request from the first client and a second edit request from the second client;

applying the first and second edit requests to the PCB master design; and

transmitting synchronization data to the first and second clients, the synchronization data permitting update of the graphical displays on the first and second clients during the editing session to reflect the first and second edits.

4. (Currently amended) The method of claim 3, further comprising:

receiving a subsequent edit request from the first client to edit an associated PCB design object; ~~in the PCB master design portion;~~ and

locking ~~the~~ that PCB design object so as to prevent editing of ~~the~~ that PCB design object based on a request received from the second client.

5. (Currently amended) The method of claim 3, wherein:

at least one of the edit requests is automatically generated in response to selection of ~~an~~ a PCB design object and a command,

the selected PCB design object is at least one of a route, a component, a trace, a via, text, and a drawing object, and

the command is at least one of move left, move right, delete and add.

6. (Previously presented) The method of claim 3, further comprising:

placing the first and second edit requests in a queue; and

applying the first and second edit requests on a first-in-first-out (FIFO) basis.

7. (Currently amended) The method of claim 3, wherein transmitting at least a portion of the PCB master design comprises transmitting the ~~PCB master design portion comprises an~~ entire PCB master design.

8. (Previously presented) The method of claim 3, further comprising:

determining if the first edit request conflicts with the second edit request.

9. (Previously presented) The method of claim 8, wherein said determining if the first edit request conflicts with the second edit request comprises at least one of:

determining whether acceptance of both the first and second edit requests will violate a spacing rule,

determining whether acceptance of both the first and second edit requests will violate a geometry rule, and

determining whether acceptance of both the first and second edit requests will violate a connectivity rule.

10. (Currently amended) The method of claim 3, wherein:

one of the edit requests is automatically generated in response to the first or second user selecting, moving, and then releasing a first PCB design object, and

another of the edit requests is automatically generated in response to the first or second user selecting a second PCB design object and then moving the second PCB design object to a graphically represented deletion area.

11. (Currently amended) A method for editing a printed circuit board (PCB) master design during an editing session throughout which each of first and second users may edit a PCB master design ~~portion~~ and view edits made to the same PCB master design ~~portion~~ by the other of the first and second users during the editing session, comprising:

transmitting at least a portion of the PCB master design ~~portion~~ to the first and second users at respective first and second clients for simultaneous graphical display on each of said clients, wherein

each of the graphical displays on the first and second clients ~~including representations~~ includes a representation of common PCB artwork corresponding to a region of the PCB master design, ~~portion~~ the displayed common PCB artwork including a plurality of associated PCB design objects, and

each of the first and second clients can simultaneously view the common PCB artwork and edit the associated PCB design objects;

receiving, during the editing session, a first edit request from the first client and a second edit request from the second client;

applying the first edit request to the PCB master design;

transmitting synchronization data to the first and second clients, the synchronization data permitting update of the graphical displays on the first and second clients during the editing session to reflect the application of the first edit request;

determining if the first edit request conflicts with the second edit request; and

reporting a conflict between the first and second edit requests to the second client.

12. (Currently amended) A server for receiving and processing requests to edit a printed circuit board (PCB) master design during an editing session throughout which each of first and second users may edit a PCB master design portion and view edits made to the same PCB master design portion by the other of the first and second users during the editing session, comprising:

a database for maintaining the master design;

connections to first and second clients; and

a processor configured ~~to~~:to

transmit the PCB master design portion to first and second clients for graphical display at each of the clients, wherein the graphical displays at each of the first and second clients permit users at said clients to simultaneously view a representation of common PCB artwork corresponding to a common region of the PCB design,

transmit, for display at each of the clients as a graphically-depicted subregion of the common region, a protection boundary associated with a PCB design object being edited at the first client, and

reject a request from the second client to edit ~~an~~ a PCB design object within ~~a~~ the graphically-depicted subregion, ~~bounded by the protection boundary.~~

13. (Currently amended) The server of claim 12, wherein the protection boundary comprises the PCB design object being edited at the first client.

14. (Currently amended) A server for receiving and processing requests to edit a printed circuit board (PCB) master design during an editing session throughout which each of first and second users may edit a PCB master design ~~portion~~ and view edits made to the same PCB master design ~~portion~~ by the other of the first and second users during the editing session, comprising:

a database for maintaining the master design;

connections to first and second clients; and

a processor configured ~~to~~ to

transmit at least a portion of the PCB master design ~~portion~~ to the first and second users at the respective first and second clients for simultaneous graphical display on each of said clients, wherein

each of the graphical displays on the first and second clients ~~including~~ includes a representation ~~representations~~ of common PCB artwork corresponding to a region of the PCB master design, ~~portion~~the displayed common PCB artwork including a plurality of associated PCB design objects, and

each of the first and second clients can simultaneously view the common PCB artwork and edit the associated PCB design objects,

receive, during the editing session, a first edit request from the first client and a second edit request from the second client,

apply the first and second edit requests to the PCB master design, and

transmit synchronization data to the first and second clients, the synchronization data permitting update of the graphical displays on the first and second clients during the editing session to reflect the first and second edits.

15. (Currently amended) The server of claim 14, wherein the processor is further configured to:

receive a subsequent edit request from the first client to edit an associated PCB design object, ~~in the PCB master design portion,~~ and

lock ~~the~~ that PCB design object so as to prevent editing of ~~the~~ that PCB design object based on a request received from the second client.

16. (Currently amended) The server of claim 14, wherein:

at least one of the edit requests is automatically generated in response to selection of ~~an~~ a PCB design object and a command,

the selected PCB design object is at least one of a route, a component, a trace, a via, text, and a drawing object, and

the command is at least one of move left, move right, delete and add.

17. (Previously presented) The server of claim 14, wherein the processor is further configured to:

place the first and second edit requests in a queue; and

apply the first and second edit requests on a first-in-first-out (FIFO) basis.

18. (Currently amended) The server of claim 14, wherein ~~the PCB master design portion comprises an entire PCB design~~ the server is configured to transmit at least a portion of the PCB master design by transmitting the entire PCB master design.

19. (Previously presented) The server of claim 14, wherein the processor is further configured to:

determine if the first edit request conflicts with the second edit request.

20. (Previously presented) The server of claim 19, wherein the processor is configured to determine if the first edit request conflicts with the second edit request by:

determining whether acceptance of both the first and second edit requests will violate a spacing rule,

determining whether acceptance of both the first and second edit requests will violate a geometry rule, and

determining whether acceptance of both the first and second edit requests will violate a connectivity rule.

21. (Currently amended) The server of claim 14, wherein:

one of the edit requests is automatically generated in response to the first or second user selecting, moving, and then releasing a first PCB design object, and

another of the edit requests is automatically generated in response to the first or second user selecting a second PCB design object and then moving the second PCB design object to a graphically represented deletion area.

22. (Currently amended) A server for receiving and processing requests to edit a printed circuit board (PCB) master design during an editing session throughout which each of first and second users may edit a PCB master design ~~portion~~ and view edits made to the same PCB master design ~~portion~~ by the other of the first and second users during the editing session, comprising:

a database for maintaining the master design;

connections to first and second clients; and

a processor configured ~~to~~:to

transmit at least a portion of the PCB master design ~~portion~~ to the first and second users at respective first and second clients for simultaneous graphical display on each of said clients, wherein

each of the graphical displays on the first and second clients ~~including~~ includes a representation ~~representations~~ of common PCB artwork corresponding to ~~the~~ a region of the PCB master design, the displayed common PCB artwork including a plurality of associated PCB design objects, and ~~master design portion~~

each of the first and second clients can simultaneously view the common PCB artwork and edit the associated PCB design objects,

receive, during the editing session, a first edit request from the first client and a second edit request from the second client,

apply the first edit request to the PCB master design,

transmit synchronization data to the first and second clients, the synchronization data permitting update of the graphical displays on the first and second clients during the editing session to reflect the application of the first edit request,

determine if the first edit request conflicts with the second edit request, and

report a conflict between the first and second edit requests to the second client.

23. (Currently amended) A machine-readable storage medium having stored thereon data representing sequences of instructions which, when executed by a processor, cause the processor to perform steps comprising:

transmitting a printed circuit board (PCB) design portion to first and second clients for graphical display at each of the clients, wherein the graphical displays at each of the first and second clients permit users at said clients to simultaneously view a representation of common PCB artwork corresponding to a common region of the PCB design;

transmitting, for display at each of the clients as a graphically-depicted subregion of the common region, a protection boundary associated with a PCB design object being edited at the first client; and

rejecting a request from the second client to edit ~~an~~ a PCB design object within ~~a~~the graphically-depicted subregion, ~~bounded by the protection boundary.~~

24. (Currently amended) The machine-readable storage medium of claim 23, wherein the protection boundary comprises the PCB design object being edited at the first client.

25. (Currently amended) A machine-readable storage medium having stored thereon data representing sequences of instructions which, when executed by a processor, cause the processor to perform steps comprising:

transmitting at least a portion of a PCB master design ~~portion~~ during an editing session throughout which each of first and second users may edit a PCB master design ~~portion~~ and view edits made to the same PCB master design ~~portion~~ by the other of the first and second users during the editing session, ~~wherein:~~wherein

the at least a portion of the PCB master design ~~portion~~ is transmitted to the first and second users at respective first and second clients for simultaneous graphical display on each of said clients, ~~and~~

each of the graphical displays on the first and second clients ~~include representations~~includes a representation of common PCB artwork corresponding to ~~the~~ a region of the PCB master design, ~~portion~~ the displayed common PCB artwork including a plurality of associated PCB design objects, and

each of the first and second clients can simultaneously view the common PCB artwork and edit the associated PCB design objects;

receiving, during the editing session, a first edit request from the first client and a second edit request from the second client;

applying the first and second edit requests to the PCB master design; and

transmitting synchronization data to the first and second clients, the synchronization data permitting update of the graphical displays on the first and second clients during the editing session to reflect the first and second edits.

26. (Currently amended) The machine readable storage medium of claim 25, comprising further instructions for performing steps comprising:

receiving a subsequent edit request from the first client to edit an associated PCB design object, ~~in the PCB master design portion;~~ and

locking ~~the~~ that PCB design object so as to prevent editing of ~~the~~ that PCB design object based on a request received from the second client.

27. (Currently amended) The machine readable storage medium of claim 25, wherein:

at least one of the edit requests is automatically generated in response to selection of ~~an~~ a PCB design object and a command,

the selected PCB design object is at least one of a route, a component, a trace, a via, text, and a drawing object, and

the command is at least one of move left, move right, delete and add.

28. (Currently amended) The machine readable storage medium of claim 25, comprising further instructions for performing steps comprising:

placing the first and second edit requests in a queue; and

accepting the first and second edit requests on a first-in-first-out (FIFO) basis.

29. (Currently amended) The machine readable storage medium of claim 25, wherein transmitting at least a portion of a PCB master design comprises transmitting the entire PCB master design~~,the PCB master design portion comprises an entire PCB design.~~

30. (Currently amended) The machine readable storage medium of claim 25, comprising further instructions for performing steps comprising:

determining if the first edit request conflicts with the second edit request.

31. (Currently amended) The machine readable storage medium of claim 30, wherein said determining if the first edit request conflicts with the second edit request comprises at least one of:

determining whether acceptance of both the first and second edit requests will violate a spacing rule,

determining whether acceptance of both the first and second edit requests will violate a geometry rule, and

determining whether acceptance of both the first and second edit requests will violate a connectivity rule.

32. (Currently amended) The machine readable storage medium of claim 25, wherein:

one of the edit requests is automatically generated in response to the first or second user selecting, moving, and then releasing a first PCB design object, and

another of the edit requests is automatically generated in response to the first or second user selecting a second PCB design object and then moving the second PCB design object to a graphically represented deletion area.

33. (Currently amended) A machine-readable storage medium having stored thereon data representing sequences of instructions which, when executed by a processor, cause the processor to perform steps comprising:

transmitting at least a portion of a PCB master design ~~portion~~ during an editing session throughout which each of first and second users may edit a PCB master design ~~portion~~ and view edits made to the same PCB master design ~~portion~~ by the other of the first and second users during the editing session, ~~wherein:~~wherein

the at least a portion of the PCB master design ~~portion~~ is transmitted to the first and second users at respective first and second clients for simultaneous graphical display on each of said clients, ~~and~~

each of the graphical displays on the first and second clients ~~include representations~~includes a representation of common PCB artwork corresponding to a region of the PCB master design, ~~portion~~ the displayed common PCB artwork including a plurality of associated PCB design objects, and

each of the first and second clients can simultaneously view the common PCB artwork and edit the associated PCB design objects;

receiving, during the editing session, a first edit request from the first client and a second edit request from the second client;

applying the first edit request to the PCB master design;

transmitting synchronization data to the first and second clients, the synchronization data permitting update of the graphical displays on the first and second clients during the editing session to reflect the application of the first edit request;

determining if the first edit request conflicts with the second edit request; and

reporting a conflict between the first and second edit requests to the second client.

34. (Currently amended) A method for editing a printed circuit board (PCB) master design, comprising:

displaying on first and second clients a representation of common PCB artwork corresponding to a region of a PCB master design, wherein the displayed PCB artwork includes a plurality of associated PCB design objects, and wherein each of the first and second clients can

simultaneously view the common PCB artwork and edit the associated PCB design objects; a graphical representation of PCB artwork corresponding to a PCB master design portion;

editing the PCB master design portion from the first client during an editing session throughout which each of first and second users at the respective first and second clients may edit the PCB master design portion and view edits made to the PCB master design portion by the other of the first and second users during the editing session;

editing the PCB master design portion from the second client during the editing session;

updating the display of the first client, during the editing session, to reflect one or more edits made from the second client during the editing session; and

updating the display of the second client, during the editing session, to reflect one or more edits made from the first client during the editing session.

35. (Currently amended) The method of claim 34, further comprising:

locking an associated PCB design object within the PCB master design portion upon selection of said PCB design object at the first client; and

preventing, based on said selection, editing of the selected PCB design object from the second client.

36. (Currently amended) The method of claim 34, wherein:

at least one of the edits is automatically generated in response to selection of an a PCB design object and a command,

the selected PCB design object is at least one of a route, a component, a trace, a via, text, and a drawing object, and

the command is at least one of move left, move right, delete and add.

37. (Previously presented) The method of claim 34, further comprising:

receiving at one of the first and second clients a report of a conflict between third and fourth edits respectively attempted from the first and second clients.

38. (Currently amended) The method of claim 34, wherein the region of the PCB master design ~~portion~~ comprises the entire PCB master design.

39. (Currently amended) A method for editing a printed circuit board (PCB) master design during an editing session throughout which each of first and second users may edit exclusive sub-portions of a PCB master design ~~portion~~ and view edits made to the PCB master design ~~portion~~ by the other of the first and second users during the editing session, comprising:

transmitting at least a portion of the PCB master design ~~portion~~ to the first and second users at respective first and second clients for simultaneous graphical display on each of said clients, the PCB master design portion including first and second exclusive sub-portions, each of the graphical displays on the first and second clients including a representation of common PCB artwork corresponding to a region of a PCB master design, the region including first and second sub-regions respectively corresponding to the first and second exclusive sub-portions, wherein ~~the graphical displays on each of said clients including representations of PCB artwork corresponding to both the first and second exclusive sub-portions~~

the displayed common PCB artwork includes a plurality of PCB design objects associated with the first sub-region and a plurality of PCB design objects associated with the second sub-region,

the first client can simultaneously edit PCB design objects associated with the first sub-region and view edits being made to PCB design objects associated with the second sub-region, and

the second client can simultaneously edit PCB design objects associated with the second sub-region and view edits being made to PCB design objects associated with the first sub-region;

receiving edit requests from the first and second clients during the editing session;

accepting requests from the first client to edit PCB design objects associated with the first ~~exclusive sub-portion~~sub-region;

accepting requests from the second client to edit PCB design objects associated with the second ~~exclusive sub-portion~~sub-region;

rejecting requests from the first client to edit PCB design objects associated with the second ~~exclusive sub-portion~~sub-region;

rejecting requests from the second client to edit PCB design objects associated with the first ~~exclusive sub-portion~~sub-region; and

transmitting synchronization data to the first and second clients, the synchronization data permitting update of the graphical displays on each of the first and second clients during the editing session to reflect application of the accepted edit requests to the respective first and second ~~exclusive sub-portions~~ sub-regions.

40. (Currently amended) A machine-readable storage medium having stored thereon data representing sequences of instructions which, when executed by a processor, cause the processor to perform steps comprising:

transmitting at least a portion of a PCB master design ~~portion~~ during an editing session throughout which each of first and second users may edit exclusive sub-portions of a PCB master design ~~portion~~ and view edits made to the PCB master design ~~portion~~ by the other of the first and second users during the editing session, ~~wherein:~~wherein

the PCB master design portion includes first and second exclusive sub-portions ~~and~~ is transmitted to the first and second users at respective first and second clients for simultaneous graphical display on each of said clients, ~~and~~

each of the graphical displays on ~~each of~~ said clients includes ~~representations~~ a representation of common PCB artwork corresponding to a region of the PCB master design, the region including first and second sub-regions respectively corresponding to ~~both~~ the first and second exclusive sub-portions,

the displayed common PCB artwork includes a plurality of PCB design objects associated with the first sub-region and a plurality of PCB design objects associated with the second sub-region,

the first client can simultaneously edit PCB design objects associated with the first sub-region and view edits being made to PCB design objects associated with the second sub-region, and

the second client can simultaneously edit PCB design objects associated with the second sub-region and view edits being made to PCB design objects associated with the first sub-region;

receiving edit requests from the first and second clients during the editing session;

accepting requests from the first client to edit PCB design objects associated with the first ~~exclusive sub-portion~~sub-region;

accepting requests from the second client to edit PCB design objects associated with the second ~~exclusive sub-portion~~sub-region;

rejecting requests from the first client to edit PCB design objects associated with the second ~~exclusive sub-portion~~sub-region;

rejecting requests from the second client to edit PCB design objects associated with the first ~~exclusive sub-portion~~ sub-region; and

transmitting synchronization data to the first and second clients, the synchronization data permitting update of the graphical displays on each of the first and second clients during the editing session to reflect application of the accepted edit requests to the respective first and second exclusive sub-portions.